US-PAT-NO: 5502836

DOCUMENT-IDENTIFIER: US 5502836 A

TITLE: Method for disk restriping during system operation

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Detailed Description Text - DETX (10):

In FIG. 2, the data is shown striped in blocks across the four hard disks 132, 134, 136 and 138. In the exemplary array 130, the entire disk array 130 is configured as volume H, a **single volume** of memory storage as presented to the **operating system** by the hard disk controller 106. Data blocks are labelled "DBx" in FIGS. 2-4. In the symbolic diagram, the data blocks DBx represent a segment of storage on the corresponding disk equal in size to the defined stripe size for the disks. In one embodiment, a common data block size is one cylinder of storage. For instance, if the **operating system** requests that a file three cylinders in length be stored on the disk array 130 starting at the beginning of the array, the controller 106 would store the file across the stripe 0 locations of disk A 132, disk B 143, and disk C 136. Thus, storage space is used from block to block across the disks in the array, as is well known in the art. For purposes of discussion, the rows depicted in the hard disks in FIG. 2 represent stripes of data on the hard disks, as is well known in the art. For simplicity, only four stripes--stripe 0, stripe 1, stripe 2 and stripe 3--are depicted.

Detailed Description Text - DETX (18):

To illustrate the method of the present invention, an upgrade from the four-disk RAID 5 system shown in FIG. 2 to the five-disk RAID 5 system shown in FIG. 4 is explained in more detail below. The system depicted in FIG. 2 has four disks reported by the hard disk controller 106 as a **single volume** (volume H) to the **operating system**. In other embodiments, the disk array 130 could be configured as more than one volume, as is well understood in the art. Accordingly, in the embodiment depicted in FIG. 2, the **operating system** requests access to the disk array 130 as a single disk volume. In other words, the **operating system** accesses the hard disk array 130 with logical addresses relative to the beginning of the volume H. The existence of the plurality of disk drives is transparent to the **operating system**. Furthermore, the presence of parity in the array is transparent to the **operating system**. Therefore, the logical addresses provided by the **operating system** to the controller 106 exclude the parity. The controller 106 interprets the logical addresses to reflect the actual configuration of the array, as is well known in the art.

Group 3 (claim 4, 5, 7, 8)